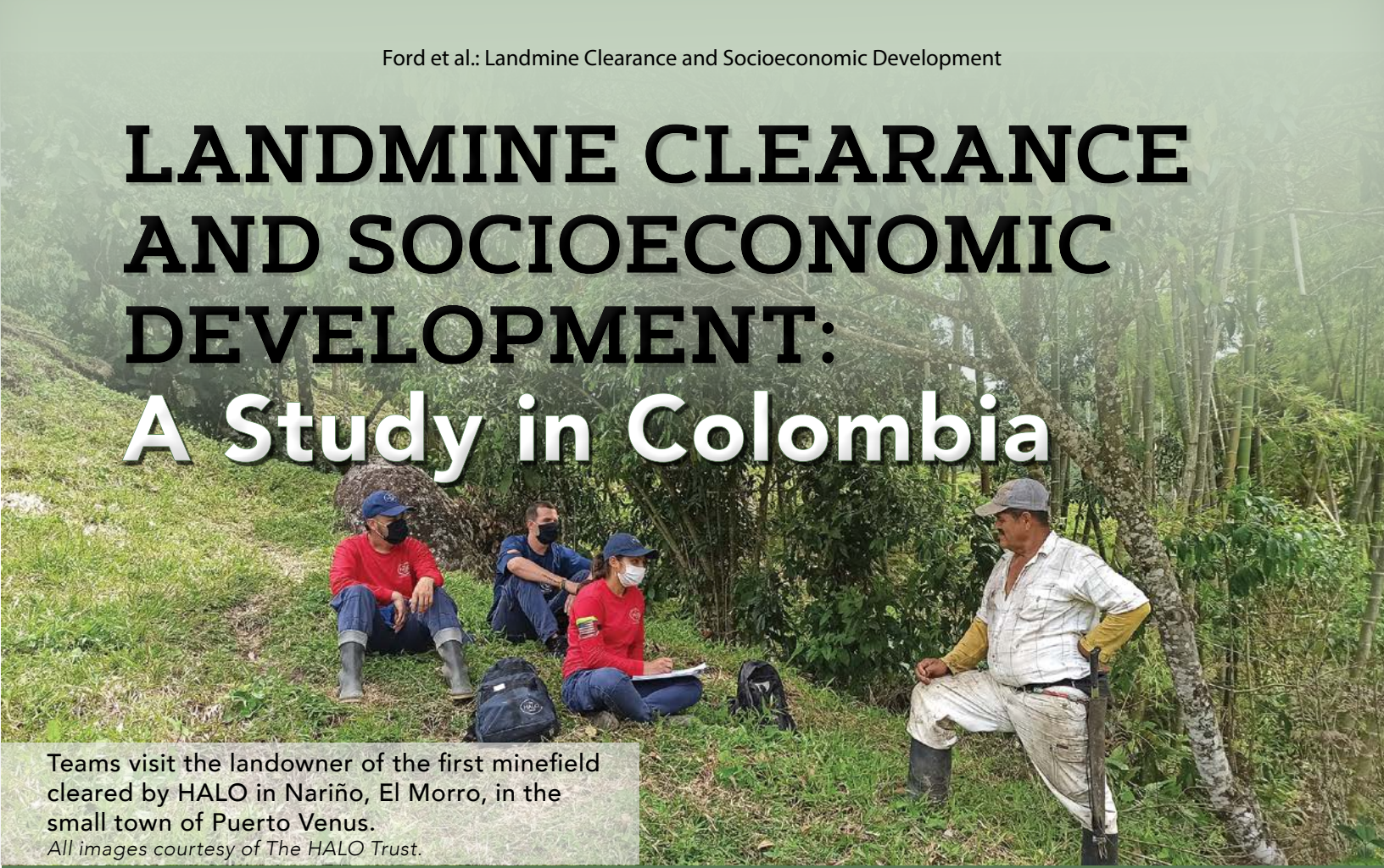


LANDMINE CLEARANCE AND SOCIOECONOMIC DEVELOPMENT: A Study in Colombia



Teams visit the landowner of the first minefield cleared by HALO in Nariño, El Morro, in the small town of Puerto Venus.

All images courtesy of The HALO Trust.

By Oliver Ford, Amasia Zargarian [The HALO Trust], and Eric Keefer [Office of Weapons Removal and Abatement, Bureau of Political-Military Affairs, U.S. Department of State]

The HALO Trust (HALO) arrived in Colombia in 2009 and, once accredited, began operations in 2013. HALO is currently the largest civilian humanitarian demining organization in the country, operating in twenty-five municipalities across eight departments.¹ The United States has supported HALO from the outset in Colombia and remains the single biggest donor for demining in the country. In 2019, through U.S. Department of State support, HALO began an innovative study to investigate the causal link between landmine clearance and socioeconomic development in Colombia. The study focused on two municipalities in the south of Antioquia Department—Nariño and La Unión—both of which were declared landmine-free by HALO in 2016. The following article describes the methodology behind this project, challenges faced during implementation, and the ultimate results of the study. It also seeks to demonstrate, more broadly, why such studies are vital for understanding the medium- to long-term effects of landmine removal in communities previously affected by explosive remnants of war (ERW).

Context

Colombia has suffered over fifty years of internal conflict, principally between the Fuerzas Armadas Revolucionarias de Colombia–Ejército del Pueblo (FARC-EP) and the government of Colombia. A peace accord was ratified between the two sides in 2016. Improvised landmines first appeared in 1990 and were used by non-state armed groups to protect strategic locations, access routes, and guerrilla camps. Their widespread use left behind a deadly legacy of explosive contamination

throughout the country. As of May 2021, over 12,000 landmine accidents have been recorded across Colombia, with more than a fifth of those occurring in Antioquia, affording it the unfortunate accolade of the department with the most accidents nationally.² In Nariño and La Unión, there have been thirty-five recorded accidents caused by ERW, twenty-nine of which occurred in Nariño and six in La Unión.

In 2013, with US funding, HALO began its first humanitarian demining operations in Nariño. Over the next three years, HALO cleared nearly 114,000 sq m of hazardous area—the equivalent of more than twenty-one football fields—and disposed of dozens of explosive devices. In La Unión, meanwhile, HALO conducted non-technical survey (NTS) across the municipality, but no explosive contamination or minefields were identified. The Colombian military had conducted demining operations in La Unión prior to HALO's arrival, but it had not yet been certified as free of mines.

In October 2016, thanks to continued funding from the United States, both Nariño and La Unión were declared landmine-free by the government of Colombia, making them the first municipalities in Colombia to be formally handed over by a civilian organization, a historic milestone made possible by HALO's work. This intervention set the conditions for local rural communities to live in a landmine-free environment, enabling socioeconomic development and the safe return of internally displaced persons (IDPs).

Project Goal and Key Areas of Investigation

In 2019, more than three years after the declaration of Nariño and La Unión as landmine-free, HALO secured US support to return to the municipalities to conduct the first in-depth post-clearance assessment of its kind in Colombia. HALO selected these municipalities for the study as they had been mine-free for longer than any other municipality handed over by a civilian organization. The three-year period of being landmine free meant that a sufficient amount of time had passed to be able to measure the effects of landmine clearance on various aspects of social and economic life. Although it was widely understood that the clearance of landmines brought benefits to communities previously affected by ERW, there was little concrete evidence to support the assumptions of the positive impacts of humanitarian mine clearance in Colombia. With this in mind, the Department of State and HALO sought to investigate the causal link between humanitarian mine clearance activities and socioeconomic development in the landmine-free municipalities of Nariño and La Unión, Antioquia.

The key areas investigated were:

1. **Productive land use** included cleared land and increased agricultural productivity.
2. **Economic benefit** increased property value and monthly income.
3. **Social benefit** increased connectivity within communities, return of IDPs, and reduced levels of fear.
4. **Municipal economic growth** increased principally through the collection of property tax.
5. **Implementation of development projects** included improvements in the standard of living through municipal and third-party investment in rural community projects.
6. **Employment** consisted of hiring local staff from the region.

The full investigation report is published on HALO's website and is available for download here.³



Methodology

This project was implemented in collaboration with two prominent economists—Professors Raúl Castro Rodríguez and Jorge Armando Rueda—from La Universidad de los Andes, Bogotá, one of Colombia's leading universities. Professors Castro and Rueda provided a macro view of the economic impact of demining at a municipal level, as well as support in the design of household survey forms and in the analysis of the data collected by HALO.

HALO conducted the investigation over a fourteen-month period (extended somewhat due to the COVID-19 pandemic) in four phases: planning and training, data collection, data analysis, and final report preparation. As there was no pre-clearance survey conducted in Nariño and La Unión, and no previous studies of this kind conducted in Colombia, HALO reconstructed a baseline in order to create a starting point from which to measure the level of socioeconomic



Data collection teams visited households of direct and indirect beneficiaries of landmine clearance.

development in the two municipalities. This was principally achieved through desk-based research as well as retrospective questioning during household surveys.

Through these household surveys, HALO gathered data from three main groups: direct beneficiaries of clearance, indirect beneficiaries of clearance, and a control group (residents of *veredas*,⁴ where no contamination was identified). Information was also gathered from key informants such as vereda presidents and members of the municipal governments. In total, HALO conducted 699 household surveys across the two municipalities.

Investigation Results

The key findings of this investigation provided concrete evidence for a causal link between humanitarian demining and socioeconomic development in Colombia. Furthermore, the investigation has produced a viable set of indicators that provide the humanitarian demining sector in Colombia with the appropriate tools to similarly measure impact across the country.

This former minefield (Figure 2) in El Bosque vereda was handed over to the local community in June 2016 and was the last minefield to be cleared in Nariño. The land has since been put to productive use by a local farmer who is growing coffee and avocados as well as grazing his animals.

Once all the data was collected, HALO and the supporting professors carried out in-depth analysis of the information gathered through survey and key informant interviews. As both the original demining activities and the more recent data collection were carried out by HALO, the participation of well-respected third-party moderators—in this case Professors Castro and Rueda—was important to ensure the impartiality and reliability of results.

Productive land use. Aside from the previously contaminated land that was cleared, there was a significant increase in overall agricultural productivity in surrounding areas as a result of the removal of explosive devices. The removal of the threat posed by landmines and other explosive ordnance has allowed landowners to use their land with confidence, resulting in higher levels of productivity. The amount of land in productive use today (for cultivation and grazing) has increased by an average of 66 percent in Nariño from when landmines first appeared. Thanks to clearance, there have been significant improvements in access routes through paved roads, improving social connectivity as well as access to services such as public transport, schools, and medical facilities.

	Direct Beneficiary Households		Indirect Beneficiary Households	
	Before Clearance	After Clearance	Before Clearance	After Clearance
Q: How fearful was/is your household to live and work in your vereda?				
Extremely fearful	69%	0%	64%	0%
Fearful	26%	0%	33%	0%
Somewhat fearful	3%	0%	1%	0%
Not fearful at all	3%	100%	2%	100%
Q: How fearful was/is your household to use your own land?				
Extremely fearful	62%	0%	51%	1%
Fearful	19%	0%	33%	1%
Somewhat fearful	6%	0%	2%	0%
Not fearful at all	13%	100%	14%	98%

Table 1. Sample questionnaire used by HALO staff.

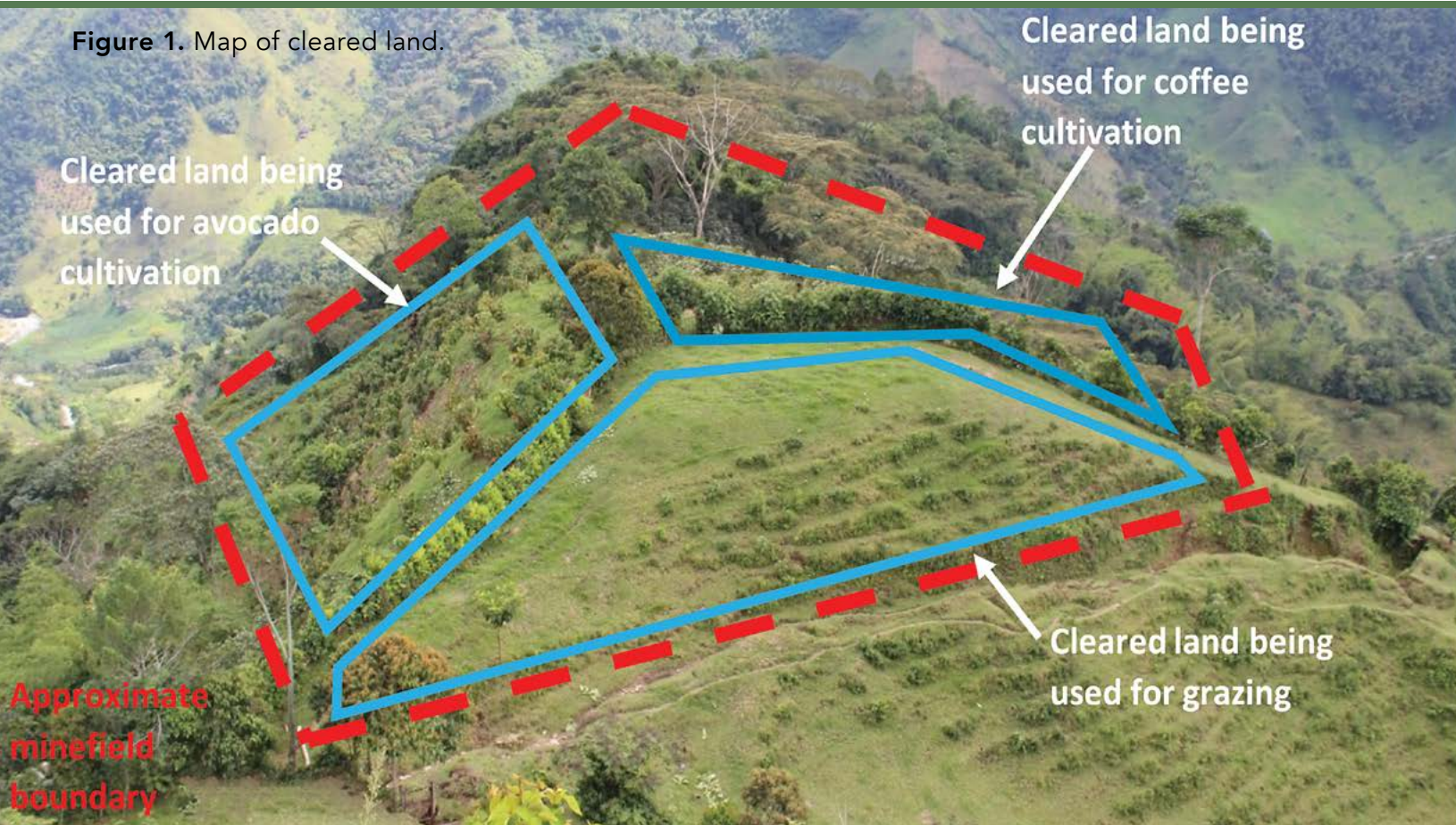
Property value. An unexpected finding of this investigation was the profound effect that the presence of landmines has had on property values in the municipality of Nariño. Where landmines were present, property values decreased by an average of 83 percent. Once clearance was completed and the municipality was declared landmine-free, a significant rise in property values followed at more than a 480 percent average increase. In La Unión, where no explosive contamination was identified, property prices increased yearly,

and land is considerably more valuable there than in Nariño. As a result of the lack of growth in property value during the twenty years when landmines and other explosives were present in Nariño, property value is still significantly lower from what it would be had landmines never been laid in the municipality.

Social benefit. In almost all cases, the three target groups reported an improvement in social connectivity. To assess the changes in social connectivity, HALO implemented a line of questioning that reported beneficiaries' attitudes toward certain activities before HALO's arrival and after clearance activities. A few examples of the questions asked and results reported are captured in Table 1.

The overall results showed improvements in the capacity to share resources, the capacity to work together, and the sense of connectivity with the rest of the municipality. As shown in Table 1, levels of fear were also significantly reduced, and direct and indirect beneficiary households reported an improved sense of security in

Figure 1. Map of cleared land.





Surveys were conducted using a combination of physical survey forms and the digital data collection application Fulcrum. Interviews were also recorded for quality control purposes.

conducting day-to-day activities such as working and transiting through their vereda. The peace of mind provided through the clearance of landmines and the increase in psychological wellbeing are almost impossible to quantify, but they are an integral part of the service that demining organizations in Colombia can provide to communities affected by conflict.

According to the information gathered, 772 displaced families (646 families from Nariño and 126 families from La Unión) have returned since their displacement, a process that cannot legally happen until clearance is completed. This in itself is a noteworthy achievement that can be directly attributed to HALO's work, as this would not have been possible without humanitarian demining.

Implementation of development projects. The presence or even suspicion of landmines acts as a roadblock to development projects, as

these are unable to begin until a municipality is declared landmine-free. This was the case in La Unión, where the implementation of key development projects followed the mine-free declaration in 2016, enabled by land release through NTS of individual veredas and eventually the entire municipality. HALO identified fourteen projects aimed at improving the socioeconomic wellbeing of rural communities, implemented by local governmental and private organizations after 2016. For instance, projects providing septic tanks, home improvements, and safe, efficient stoves have boosted the quality of life for rural families. Furthermore, these communities received tools and training that will help diversify crop cultivations and generate income. The implementation of such projects is inherently sustainable, as it builds capacity within the community for individuals to provide for themselves into the future.

Application of Results

The findings of this investigation have highlighted a critical need for accelerated socioeconomic development in rural Colombia. As described previously, the current system requires an entire municipality to be declared landmine-free before the implementation of development projects, which hampers the rate of development for some of Colombia's most vulnerable communities. In some cases, a vereda may be declared landmine-free but ineligible for any additional support for years to come until humanitarian demining activities are completed in the rest of the municipality. Fortunately, the government of Colombia is considering changes to this system for approving development projects, supported by the results of this investigation.

As part of this project, HALO held a seminar in March 2021 to share the findings of the investigation with the humanitarian demining sector in Colombia, demonstrating what is possible in terms of impact measurement. Following the seminar, the Office of the High Commissioner for Peace (OACP) and the Swiss Foundation for Mine

Action (FSD) are holding talks as to how this type of investigation can be replicated across the country. Doing so will allow Colombians to not only better understand the true value of landmine clearance but also help the government identify where support is needed for communities affected by ERW.

The framework and methodology established during this study can be easily replicated, not only in Colombia but also in other countries affected by landmines. By better articulating the medium- to long-term outcomes of humanitarian demining in a specific country context—and providing the evidence to support these findings—humanitarian organizations, governments, and their donor partners can more readily demonstrate the true benefit of landmine clearance.

Lessons Learned

Given this was the first investigation of its kind in Colombia, there are some critical lessons learned for future projects. As in all academic investigations, the reliability of data is the cornerstone of objective and informative results. The lack of baseline data and the need to depend on respondents' recollection of times past indicate that there is a degree of inaccuracy that must be accounted for. In order to produce more reliable results, it is important that socioeconomic data is

recorded at the earliest possible opportunity, prior to the start of landmine clearance or even NTS.

The inclusion of Professors Castro and Rueda as third-party participants was of monumental value to this investigation. Their input provided a level of objectivity otherwise impossible had HALO conducted the study alone. An unbiased third party also affords a higher degree of transparency and credibility in the reported outcomes.



William Otavalo (fourty-two) lives in the vereda of San Miguel in Nariño, working the land to support his family. In 2004, while working on a neighbor's farm, William fell victim to an improvised landmine, sustaining a severe injury to his hand, burns to his body, and multiple shrapnel wounds. When the fighting intensified in Nariño in 2006, William and his family were forcibly displaced from their family home.

After William's family eventually returned to their farm years later, they were fearful of the potential mines that lay hidden, and productive land remained abandoned. When HALO arrived in 2013, William provided invaluable information that led to the removal of twelve landmines from his land, preventing further injury. Thanks to the clearance on his property, William is now able to use all of his land with the confidence that it is safe and is grazing cattle that he has since purchased. The clearance of the mines on his land has also provided access to a fresh water source, which has in turn enabled him to start a fish farming project, bringing further economic stability to his family.

Perspective from the U.S. Department of State

The United States is the leading contributor to humanitarian demining projects both globally and in Colombia, where US contributions have exceeded \$159 million. Foreign assistance is an investment, and it is incumbent on the Department of State to demonstrate clearly to American taxpayers that their investment is achieving concrete results. To that end, the Department of State requires grant recipients to submit regular programmatic and financial reports on project performance, including project outputs. That information, though important for demonstrating progress, does not paint a complete picture of the full impact of US humanitarian demining assistance. To more holistically demonstrate its impact, the Department of State agreed to fund HALO's pilot post-clearance impact assessment.

The Department of State has provided \$92.5 million to support a variety of mine action initiatives in Colombia since the peace accord was signed in late 2016, with a significant majority of that assistance (approximately 79 percent) going toward land release operations in

Conclusions

The evidence obtained during this investigation demonstrates a causal link between humanitarian mine clearance and socioeconomic development in Colombia. The presence or suspicion of landmines directly impedes the capacity of municipal governments and third parties to implement development projects, as well as the legal return of IDPs and processing of land restitution claims. The clearance of landmines and other explosive ordnance is the first step in creating the conditions for rapid socioeconomic development and an overall improvement in living conditions in rural areas affected by conflict. The increase in land value after clearance, as well as general increases in monthly income, will continuously help with creating wealth and reducing poverty levels across Nariño.

Though the socioeconomic situation in Nariño and La Unión has improved, the long-term benefits of land release through clearance and NTS are likely not to be seen for another five years or more. Importantly though, the foundations have now been laid for a stable and diverse economy. Continued donor support for humanitarian demining in conflict-affected communities across Colombia will enable and ensure the conditions for socioeconomic development, growth, and stability in the years to come. ©

"Through this study, we now have the scientific and academic evidence to be able to say, that in effect, there is positive psychological impact on communities, once the suspicion of landmines is removed, allowing for the return of displaced persons and processing of land restitution claims."

~ **Martha Isabel Hurtado**,
Deputy High Commissioner for Peace

priority locations. That assistance directly benefits rural communities most affected by the long conflict with the FARC-EP, and it also directly enables other US and Colombian priority efforts, including coca eradication, development initiatives, and land restitution. Humanitarian demining work made these broader efforts possible, and the study's findings provide clear and irrefutable evidence that land release generates positive socioeconomic outcomes.

The evidence produced by HALO's study clearly demonstrates that humanitarian demining in Colombia has been a wise investment. Additionally, HALO's efforts established a foundation for future monitoring and evaluation (M&E) initiatives in Colombia. In August 2021, HALO developed roving M&E teams to collect information from communities affected by explosive hazards at various stages of the demining process. These teams will provide additional information that further reinforces the link between humanitarian demining and socioeconomic development.

Oliver Ford Monitoring & Evaluation Officer The HALO Trust



Oliver Ford moved to Colombia from the United Kingdom in 2014 and joined HALO in 2017 as Program Officer. He was appointed to Monitoring & Evaluation Officer in 2019 and works to improve Colombia's socioeconomic data collection and analysis to better understand the

impact mine action generates in conflict-affected communities in Colombia.

Amasia Zargarian Grants and Development Manager The HALO Trust



Amasia Zargarian is the grants and development manager for The HALO Trust (USA), overseeing HALO's US federal and private grants from Washington, DC. He first joined HALO in 2016, spending two years as the regional program officer for the Caucasus, based mainly in Nagorno Karabakh and also supporting HALO's Georgia and Abkhazia programs. Zargarian is a graduate of Stanford University, where he received his bachelor's and master's degrees.

Eric Keefer PM/WRA



Eric Keefer joined the Office of Weapons Removal and Abatement in the U.S. Department of State's Bureau of Political-Military Affairs (PM/WRA) in 2014 as a Frasure-Kruzel-Drew Memorial Fellow. He has supported the office's Resource Management division and managed

programs in Africa, the Middle East, and Latin America. Keefer received his bachelor's and master's degrees from James Madison University.

ENDNOTES

Landmine Clearance and Socio-economic Development: A study in Colombia

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1. A department is the Colombian equivalent of a state in the United States.
2. AICMA downloadable spreadsheets, accessed May 2021.
3. "Clearing the Legacy of Conflict in Colombia." The HALO Trust. <https://bit.ly/3lBe431>.
4. A *vereda* is an administrative division within a municipality. It represents an important geographical demarcation for humanitarian mine action in Colombia.